

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Original) A toothbrush comprising:  
a handle;  
a head extending from the handle; and  
a plurality of tufts of bristles extending from the head, each tuft of bristles being supported for rotation about only one axis, each tuft of bristles being rotatable independent of the other tuft(s) of bristles.
2. (Original) The toothbrush of claim 1, wherein each tuft has a range of rotation of about 60 degrees.
3. (Original) The toothbrush of claim 1, wherein each tuft can rotate about 30 degrees to either side of a vertical position in which the tuft is perpendicular to a top surface of the head.
4. (Original) The toothbrush of claim 1, further including at least one tooth cleaning element which cannot be rotated.
5. (Original) The toothbrush of claim 1, wherein each tuft includes at its non-brushing end a bearing which is substantially cylindrical in shape in its major portion, each bearing being secured in its own hollow space within the head, each bearing allowing rotation of its respective tuft.

6. (Original) The toothbrush of claim 5, wherein the head is made of at least two pieces which are joined together to secure the bearing within the head.

7. (Original) The toothbrush of claim 5, wherein a viscous substance is provided in each hollow space in the head to provide some resistance to rotation of the tufts.

8. (Original) The toothbrush of claim 1, wherein a portion of the head limits rotation of each tuft.

9. (Original) The toothbrush of claim 1, wherein the tufts are rotated by contact with a portion of an oral cavity.

10. (Original) The toothbrush of claim 1, wherein each tuft includes at its non-brushing end a living hinge, each living hinge being secured partially within the head, each living hinge allowing rotation of its respective tuft.

11. (Once Amended) The toothbrush of claim 1, wherein the axis about which each tuft is rotatable is substantially perpendicular to a long axis of the [element] tuft.

12. (Twice Amended) An apparatus comprising:  
a toothbrush head; and  
a first group of tooth cleaning elements extending from the head and a second group of a plurality of tooth cleaning elements extending from the head,  
the elements within each of the groups being of a common type and the type of elements in the first group being different from the type of elements in the second group, and  
wherein each of the elements of the first group is nonrotatable, and each of the elements in the second group is supported for rotation about only one axis and independently rotatable with respect to one another and any other tooth cleaning element on the toothbrush head.

13. (Previously Added) The apparatus of claim 12 wherein all of the tooth cleaning elements of the toothbrush are in the first and second group.

14. (Previously Added) The apparatus of claim 12 wherein the first group includes a plurality of tooth cleaning elements.

15. (Previously Added) The apparatus of claim 12 wherein each of the elements in the second group is adjacent to at least one of the elements in the first group.

16. (Previously Added) The apparatus of claim 12 wherein the interproximal residence time of elements in the second group is about 1.6 times or greater than the interproximal residence time of the elements in the first group.

17. (Previously Added) The apparatus of claim 12 wherein the elements in the second group are longer than the elements in the first group.

18. (Previously Added) The apparatus of claim 12 wherein the elements in the second group are made of polymer.

19. (Previously Added) The apparatus of claim 12 wherein each of the elements in the second group is a fin or tuft of bristles.

20. (Previously Added) The apparatus of claim 12 wherein each of the elements in the second group is a fin.

21. (Previously Added) The apparatus of claim 20 wherein each of the elements in the first group is a tuft of bristles.

22. (Previously Added) The apparatus of claim 12, further comprising a handle, and wherein the head extends from the handle.

23. (Previously Added) The apparatus of claim 22, wherein the axis about which each element in the second group is rotatable is substantially perpendicular to a long axis of the element.

24. (Previously Added) The apparatus of claim 12 wherein the elements in the first group are free of spring bias tending to rotate the elements after deflection.

25. (Thrice Amended) An apparatus comprising:  
a toothbrush head; and  
a plurality of tufts of bristles extending from the head, each tuft of bristles being supported for rotation about only one axis, each tuft of bristles being rotatable independent of all other tuft(s) of bristles on the toothbrush head,  
further including at least one tooth cleaning element which cannot be rotated.

26. (Previously Added) The apparatus of claim 25, wherein each tuft has a range of rotation of about 60 degrees.

27. (Previously Added) The apparatus of claim 25, wherein each tuft can rotate about 30 degrees to either side of a vertical position in which the tuft is perpendicular to a top surface of the head.

28. Cancelled.

29. (Previously Added) The apparatus of claim 25, wherein each tuft includes at its non-brushing end a bearing which is substantially cylindrical in shape in its major portion, each bearing being secured in its own hollow space within the head, each bearing allowing rotation of its respective tuft.

30. (Previously Added) The apparatus of claim 29, wherein the head is made of at least two pieces which are joined together to secure the bearing within the head.

31 (Previously Added) The apparatus of claim 29, wherein a viscous substance is provided in each hollow space in the head to provide some resistance to rotation of the tufts.

32 (Previously Added) The apparatus of claim 25, wherein a portion of the head limits rotation of each tuft.

33 (Previously Added) The apparatus of claim 25, wherein the tufts are rotated by contact with a portion of an oral cavity.

34. (Withdrawn) The apparatus of claim 25, wherein each tuft includes at its non-brushing end a living hinge, each living hinge being secured partially within the head, each living hinge allowing rotation of its respective tuft.

35. (Previously Added) The apparatus of claim 25, wherein the axis about which each tuft is rotatable is substantially perpendicular to a long axis of the element.

36. (Previously Added) The apparatus of claim 25, further comprising a handle.

37. (Twice Amended) A toothbrush head, comprising:

a plurality of first tooth cleaning elements extending from the head and a second tooth cleaning element extending from the head;

the first tooth cleaning elements being different from the second tooth cleaning element;  
and

wherein the second tooth cleaning element extends from a socket and wherein the second tooth cleaning element is rotatably disposed within the socket and wherein the socket defines a range of motion for the second tooth cleaning element along a first direction that is greater than that along a second direction orthogonal to the first direction.

38. (Previously Added) The toothbrush head of claim 37, further comprising a plurality of the second tooth cleaning elements.

39. (Previously Added) The toothbrush head of claim 37, wherein the plurality of first tooth cleaning elements are non-rotatable.

40. (Previously Added) The toothbrush head of claim 37, wherein the second tooth cleaning element comprises an elastomer.

41. (Previously Added) The toothbrush head of claim 40, wherein the second tooth cleaning element is in the form of a fin.

42. (Previously Added) The toothbrush head of claim 41, the second tooth cleaning element further comprises a bearing that is disposed within the socket.

43. (Once Amended) The toothbrush head of claim 37, wherein the range of motion of the second tooth cleaning element along the first direction is less than about 60 degrees.

44. (Once Amended) The toothbrush head of claim 43, wherein the range of rotation along the first direction is limited by a portion of the head.

45. (Previously Added) The toothbrush head of claim 37, wherein the head further comprises a top surface and the top surface has an aperture and wherein the second tooth cleaning element extends from the aperture.

46. (Previously Added) The toothbrush head of claim 38, wherein the plurality of first tooth cleaning elements and the plurality of second tooth cleaning elements are alternately arranged adjacent an edge of the toothbrush head.

47. (Previously Added) The toothbrush head of claim 46, wherein the plurality of second tooth cleaning elements comprises about 4.

48. (Previously Added) The toothbrush head of claim 46, wherein the plurality of first tooth cleaning elements and the plurality of second tooth cleaning elements are alternately arranged adjacent two edges of the toothbrush head.

49. (Previously Added) A toothbrush, comprising the toothbrush head of claim 37 and a handle attached to the toothbrush head.

50. (Once Amended) A toothbrush head, comprising:  
a top surface;  
a socket;  
a tooth cleaning element extending from the top surface of the head, wherein the tooth cleaning element comprises an elastomeric first portion for contacting the teeth and a second portion, wherein the second portion is rotatably disposed within the socket and wherein the first

portion is formed separately from the second portion and wherein the first portion is attached to the second portion, and

wherein the socket defines a range of motion for the tooth cleaning element along a first direction that is greater than that along a second direction orthogonal to the first direction.

51. (Previously Added) The toothbrush head of claim 50, further comprising a plurality of the tooth cleaning elements.

52. (Previously Added) The toothbrush head of claim 50, wherein the tooth cleaning element is in the form of a fin.

53. (Previously Added) The toothbrush head of claim 50, wherein the second portion is a bearing.

54. (Once Amended) The toothbrush head of claim 50, wherein the range of motion of the tooth cleaning element along the first direction is less than about 60 degrees.

55. (Previously Added) The toothbrush head of claim 50, wherein the range of rotation of the tooth cleaning element is limited by a portion of the head.

56. (Previously Added) The toothbrush head of claim 50, the top surface has an aperture and wherein the tooth cleaning element extends from the aperture.

57. (Previously Added) The toothbrush head of claim 51, further comprising a plurality of second tooth cleaning elements that are non-rotatable.



58. (Previously Added) The toothbrush head of claim 57, wherein the tooth cleaning elements and the second tooth cleaning elements are alternatingly arranged adjacent an edge of the toothbrush head.

59. (Previously Added) The toothbrush head of claim 58, wherein the plurality of second tooth cleaning elements comprises about 4.

60. (Previously Added) The toothbrush head of claim 58, wherein the plurality of first tooth cleaning elements and the plurality of second tooth cleaning elements are alternatingly arranged adjacent two edges of the toothbrush head

61. (Previously Added) The toothbrush head of claim 50, wherein the second portion is formed by molding.

62. (Previously Added) A toothbrush, comprising the toothbrush head of claim 50 and a handle attached to the toothbrush head.

63. (Once Amended) A toothbrush head, comprising:  
a top surface having a first aperture, wherein the aperture extends from the top surface through to an intermediate surface of the head to define an opening on the intermediate surface;  
a socket;  
a rotatable tooth cleaning element extending from the top surface of the head, wherein the tooth cleaning element comprises a first portion for contacting the teeth and a second portion, wherein the second portion is disposed within the socket;  
wherein the opening on the intermediate surface is covered by a piece that forms a bottom surface of the head that is opposite the top surface of the head; and  
wherein the socket defines a range of motion for the tooth cleaning element along a first direction that is greater than that along a second direction orthogonal to the first direction.

64. (Previously Added) The toothbrush head of claim 63, further comprising a plurality of the rotatable tooth cleaning elements.

65. (Previously Added) The toothbrush head of claim 64, further comprising a plurality of second tooth cleaning elements that are non-rotatable.

66. (Previously Added) The toothbrush head of claim 63, wherein the first portion of the tooth cleaning element comprises an elastomer.

67. (Previously Added) The toothbrush head of claim 66, wherein the tooth cleaning element is in the form of a fin.

68. (Previously Added) The toothbrush head of claim 63, wherein the second portion is in the form of a bearing.

69. (Once Amended) The toothbrush head of claim 63, wherein the range of motion for the tooth cleaning element along the first direction is less than about 60 degrees.

70. (Once Amended) The toothbrush head of claim 69, wherein the range of motion is limited by a portion of the head.

71. (Once Amended) The toothbrush head of claim 65, wherein the plurality of rotatable tooth cleaning elements and the plurality of second tooth cleaning elements are alternately arranged adjacent an edge of the toothbrush head.

72. (Previously Added) The toothbrush head of claim 71, wherein the plurality of tooth cleaning elements comprises about 4.

73. (Previously Added) The toothbrush head of claim 71, wherein the plurality of first tooth cleaning elements and the plurality of second tooth cleaning elements are alternatingly arranged adjacent two edges of the toothbrush head.

74. (Previously Added) A toothbrush, comprising the toothbrush head of claim 63 and a handle attached to the toothbrush head.

75. (Once Amended) A toothbrush head, comprising:  
a top surface comprising an aperture; and  
a tooth cleaning element extending from the aperture, wherein the tooth cleaning element comprises an elastomer and wherein the tooth cleaning element is rotatably disposed within a socket of the head, and  
wherein the socket defines a range of motion for the tooth cleaning element along a first direction that is greater than that along a second direction orthogonal to the first direction.

76. (Previously Added) The toothbrush head of claim 75, further comprising a plurality of the tooth cleaning elements.

77. (Previously Added) The toothbrush head of claim 76, further comprising a plurality of second tooth cleaning elements that are non-rotatable.

78. (Previously Added) The toothbrush head of claim 75, wherein the tooth cleaning element is in the form of a fin.

79. (Once Amended) The toothbrush head of claim 75, wherein the range of motion of the tooth cleaning element along the first direction is less than about 60 degrees.

80. (Once Amended) The toothbrush head of claim 79, wherein the range of motion along the first direction is limited by a portion of the head.

81. (Previously Added) The toothbrush head of claim 77, wherein the plurality of rotatable tooth cleaning elements and the plurality of second tooth cleaning elements are alternately arranged adjacent an edge of the toothbrush head.

82. (Previously Added) The toothbrush head of claim 81, wherein the plurality of tooth cleaning elements comprises about 4.

83. (Previously Added) The toothbrush head of claim 81, wherein the plurality of first tooth cleaning elements and the plurality of second tooth cleaning elements are alternately arranged adjacent two edges of the toothbrush head.

84. (Previously Added) A toothbrush, comprising the toothbrush head of claim 75 and a handle attached to the toothbrush head.

85-95. Canceled.

96. (Once Amended) A toothbrush, comprising:  
a handle;  
a head attached to the handle, the head having a top surface with an aperture, wherein the aperture extends from the top surface through to an intermediate surface of the head to define an opening on the intermediate surface;  
a socket;  
an elastomeric tooth cleaning element extending from the top surface of the head,  
wherein the tooth cleaning element comprises a first portion for contacting the teeth and a second portion, wherein the second portion is disposed within the socket;

wherein the opening on the intermediate surface is covered by a piece that forms a bottom surface of the head that is opposite the top surface of the head and wherein the piece is formed separately from the top surface, and

wherein the socket defines a range of motion for the tooth cleaning element along a first direction that is greater than that along a second direction orthogonal to the first direction.

97. (Previously Added) The toothbrush of claim 96, wherein the piece is formed by injection molding.

98. (Previously Added) The toothbrush of claim 96, wherein the elastomeric tooth cleaning element is in the form of a fin.

99. (Previously Added) The toothbrush of claim 96, wherein the elastomeric tooth cleaning element is rotatable.

100. (Previously Added) The toothbrush of claim 96, further comprising a plurality of the tooth cleaning elements.

101. (Previously Added) The toothbrush of claim 100, further comprising a plurality of second tooth cleaning elements that are non-rotatable.

102. (Previously Added) The toothbrush of claim 101, wherein the non-rotatable cleaning elements are provided in the form of tufts of bristles and wherein the tufts of bristles are stapled to the head.

103. (Previously Added) The toothbrush of claim 101, wherein the plurality of tooth cleaning elements and the plurality of second tooth cleaning elements are alternatingly arranged on the top surface of the head.

104. (Previously Added) The toothbrush of claim 96, wherein the piece is secured to the top surface portion of the head by snap features.

105. (Previously Added) The toothbrush of claim 96, wherein the piece is secured to the top surface portion of the head by heat welding.

106. (Previously Added) The toothbrush of claim 96, wherein the piece is secured to the top surface portion of the head by injection molding.

107. (New) The toothbrush head of claim 37, wherein the first direction is along a length of the toothbrush head.

108. (New) The toothbrush head of claim 50, wherein the first direction is along a length of the toothbrush head.

109. (New) The toothbrush head of claim 63, wherein the first direction is along a length of the toothbrush head.

110. (New) The toothbrush head of claim 75, wherein the first direction is along a length of the toothbrush head.

111. (New) The toothbrush of claim 96, wherein the first direction is along a length of the toothbrush head.

112. (New) The toothbrush head of claim 37, wherein the range of motion along the first direction is substantially greater than that along the second direction.

113. (New) The toothbrush head of claim 50, wherein the range of motion along the first direction is substantially greater than that along the second direction.

114. (New) The toothbrush head of claim 63, wherein the range of motion along the first direction is substantially greater than that along the second direction.

115. (New) The toothbrush head of claim 75, wherein the range of motion along the first direction is substantially greater than that along the second direction.

116. (New) The toothbrush of claim 96, wherein the range of motion along the first direction is substantially greater than that along the second direction.

117. (New) The apparatus of claim 12, wherein the type of elements in the first group is structurally different from the type of elements in the second group.

118. (New) The apparatus of claim 12, wherein the type of elements in the first group is compositionally different from the type of elements in the second group.

119. (New) The apparatus of claim 12, wherein the type of elements in the first group is structurally and compositionally different from the type of elements in the second group.

120. (New) The apparatus of claim 12, wherein the elements in the first group are rigidly secured to the toothbrush head.

121. (New) The apparatus of claim 37, wherein the first tooth cleaning elements are structurally different from the second tooth cleaning elements.

122. (New) The apparatus of claim 37, wherein the first tooth cleaning elements are compositionally different from the second tooth cleaning elements.

123. (New) The apparatus of claim 37, wherein the first tooth cleaning elements are structurally and compositionally different from the second tooth cleaning elements.

124. (New) The apparatus of claim 37, wherein the first tooth cleaning elements are rigidly secured to the head.

125. (New) The toothbrush head of claim 37, wherein the second tooth cleaning element is disposed to rotate independent of all other tooth cleaning elements on the head.

126. (New) The toothbrush head of claim 50, wherein the tooth cleaning element is disposed to rotate independent of all other tooth cleaning elements on the head.

127. (New) The toothbrush head of claim 63, wherein the tooth cleaning element is disposed to rotate independent of all other tooth cleaning elements on the head.

128. (New) The toothbrush head of claim 75, wherein the tooth cleaning element is disposed to rotate independent of all other tooth cleaning elements on the head.

129. (New) The toothbrush of claim 96, wherein the tooth cleaning element is disposed to rotate independent of all other tooth cleaning elements on the head.

130. (New) A toothbrush head, comprising:  
a plurality of first tooth cleaning elements extending from the head and a second tooth  
cleaning element extending from the head;  
the first tooth cleaning elements being different from the second tooth cleaning element;



wherein the second tooth cleaning element extends from a socket and wherein the second tooth cleaning element is rotatably disposed within the socket, and

wherein the second tooth cleaning element comprises an elastomeric element in the form of a fin.

131. (New) Apparatus comprising:

a toothbrush head;

a first group of tooth cleaning elements extending from the head, wherein each element in the first group is rigidly secured to the head; and

a second group of a plurality of tooth cleaning elements extending from the head, wherein each element in the second group is pivotally secured to the head to provide a range of motion along a first direction that is greater than that along a second direction orthogonal to the first direction, and wherein the elements in the second group can pivot independently of any other tooth cleaning element on the head.